FAT SHARK
RC VISION SYSTEMS

TELEPORTER V3

RTF FPV KIT

USER MANUAL

Revision A 07/13/2013

For more product information, please visit:
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Introduction

Congratulations on purchasing the Fat Shark Teleporter V3 RTF FPV video piloting system with goggles, transmitter and HD camera. To ensure your continued enjoyment, please take the time to thoroughly read through this operating manual before using.

Product Compatibility

The Teleporter has been designed to adhere to established video standards and is compatible with any product also adhering to accepted video standards. Due to the high number of different manufacturers and variation in quality, it's impossible to for us to have tested with every product combination and some troubleshooting may be required if mix/matching components. The Teleporter has been thoroughly tested with ImmersionRC gear. For best results and no compatibility issues, Fat Shark recommends ImmersionRC gear for your accessory products.

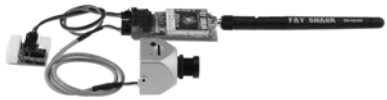
IMPORTANT!!!! Product Warning!!!!!
DO NOT LEAVE HEADSET EXPOSED TO DIRECT SUNLIGHT. SUNLIGHT WILL MAGNIFY THROUGH THE OPTICS AND BURN HOLES IN THE LCD COLOR FILTER THIS WILL NOT BE COVERED BY WARRANTY. KEEP GOGGLES IN PROTECTIVE CASE WHEN NOT IN USE

Product contents

Carry case

Teleporter Headset

FPV Downlink Kit (HD camera, TX, filter)



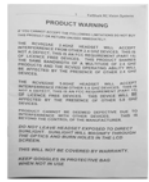
AV cable

5G8 Antenna (TX, RX)

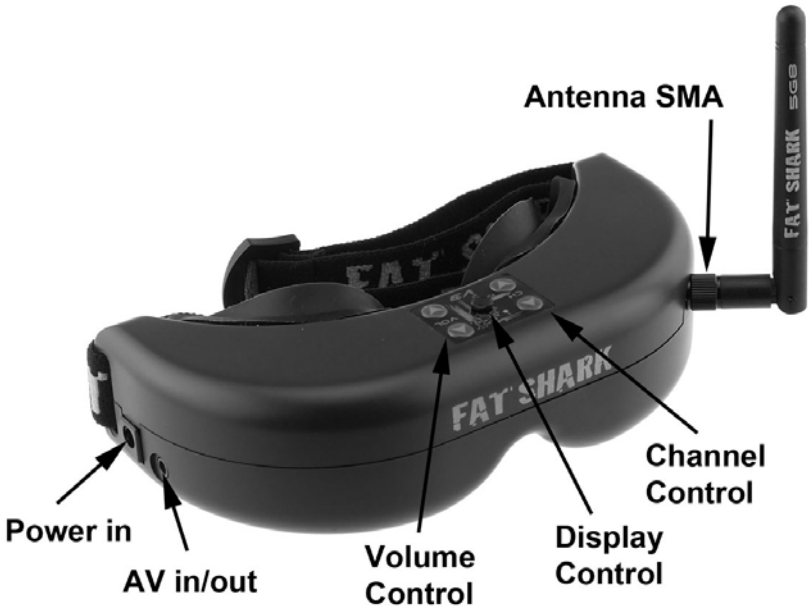
Battery

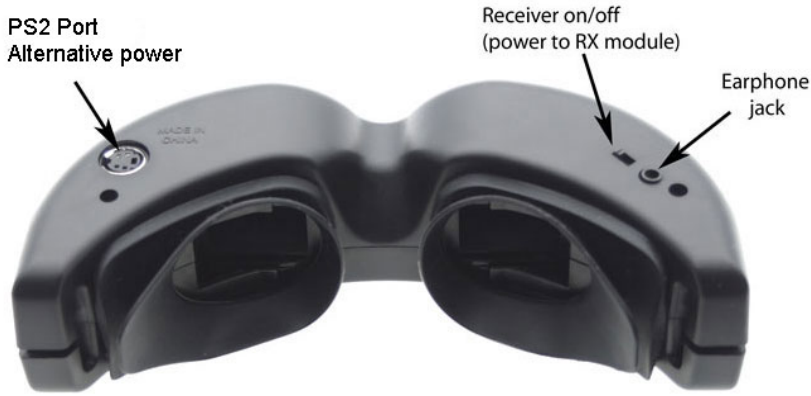
(with discharge adapter)

Manual



Controls Diagram





Controls

Brightness/contrast control: pressing left and right increases/decreases display contrast. Press forward/back increases/decreases brightness.

Zoom control: Depressing display control button (vertical axis) toggles zoom mode. On normal (no zoom) the display will show entire HD camera's 16:9 image with black bars top and bottom. On zoom mode, the image will crop the sides to fill the 4:3 display which maximizes viewed image size.

RX power switch: The receiver module power is controlled by this switch. If viewing video source via the AV cable; the RX module needs to be turned off to avoid image conflict.

Channel select: Pressing channel up/down buttons will cause the channel to incrementally increase/decrease. Audio beep sounds on channel change. A long beep sounds on channel top and bottom limits.

Note: Fat Shark only guarantees compatibility with Fat Shark or ImmersionRC transmitters.

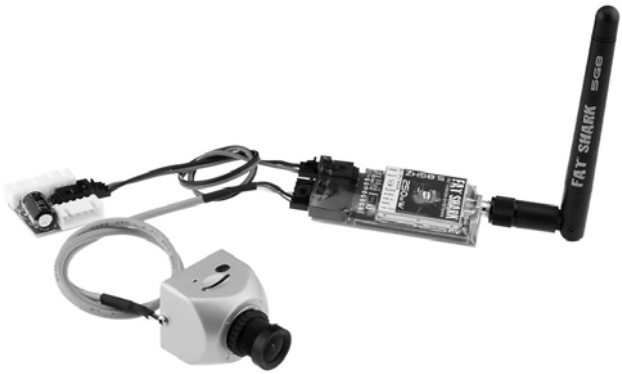
CH1: 5740 MHz CH2: 5760 MHz CH3: 5780 MHz CH4: 5800 Mhz
CH5: 5820 MHz CH6: 5840 Mhz CH7: 5860 MHz

Low battery warning: Audio warning if input voltage drops below 6.8V

Volume control: each press of button increments volume up or down. Standard earphones can be used with the Teleporter (not included).

Downlink Overview (Camera, TX, Power)

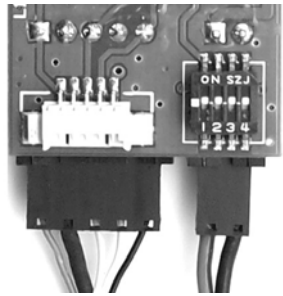
Downlink system comes preassembled and tested for plug/play with your aircraft. Simply connect the balance lead of your 2S, 3S or 4S (7.4V, 11.1V, 14.8V) RC battery to provide power to your Fat Shark Downlink and you are ready to fly. The handy balance lead filters RC servo and motor noise from your RC pack for a crisp, clear image.



Transmitter

Channel select chart:

	1	2	3	4
Ch1 5740 MHz	On	On	On	N/A
Ch2 5760 MHz	Off	On	On	N/A
Ch3 5780 MHz	On	Off	On	N/A
Ch4 5800 Mhz	Off	Off	On	N/A
Ch5 5820 MHz	On	On	Off	N/A
Ch6 5840 Mhz	Off	On	Off	N/A
Ch75860 MHz	On	Off	Off	N/A



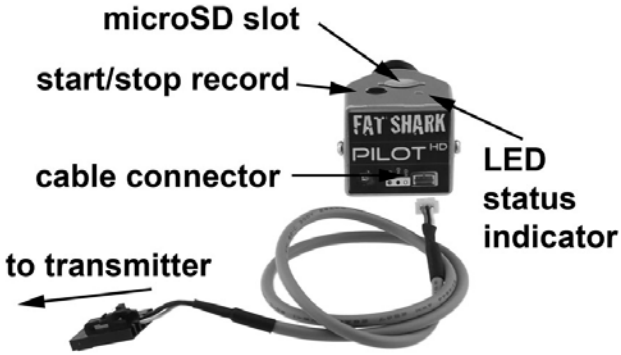
WARNING: DO NOT POWER TRANSMITTER
WITHOUT ANTENNA ATTACHED. NO ANTENNA LOAD WILL CAUSE
DESTROY TX RF AMPLIFIER – NOT COVERED BY WARRANTY
Note: White connector on back of transmitter is for connecting an ImmersionRC TinyTelemetry accessory (adds Telemetry data to audio channel so plane can be tracked with the ImmersionRC antenna tracker for longer range).

720p HD Pilot Camera

The 3.5mm lens delivers a wide angle 120 degree FOV which is ideal for fixed camera piloting. Camera powers up automatically when connected to transmitter (when transmitter powered).

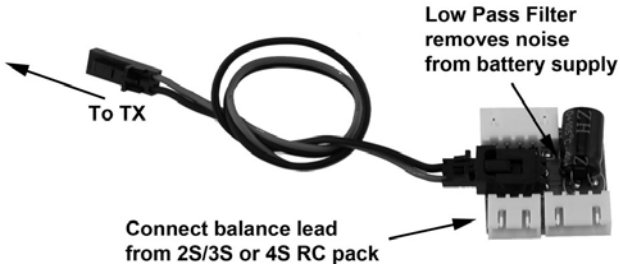
Operation: Recording start/stop is controlled with the button. The camera will remain powered as long as power is supplied. You will need to add a microSD card (not included) to record HD video. The camera can be used as an FPV camera whether recording or not (or whether has SD card or not).

Recording Indicator: LED status indicator is solid red on standby and flash red on record. The camera also has an OSD that shows the status in the goggle image. White timer is standby, Red timer shows the total time the camera has been recording.



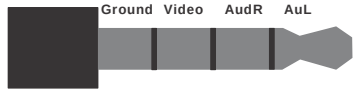
Power (via discharge filter supply)

The discharge filter supply allows you to power your downlink equipment from your onboard RC pack. Connect as shown below:



AV in/out Port

RCA Connector: Yellow: Video, White: Audio Left, Red: Audio Right



Recording Video

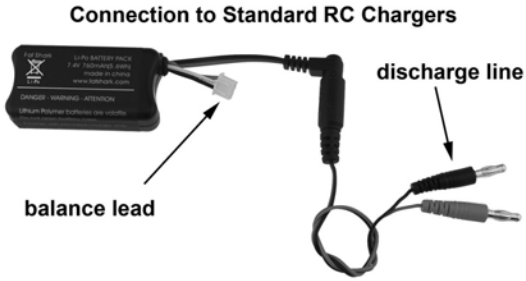
Connect AV cable to AV out port on right side of headset. Connect recording device to cables and set up as per manufacturer directions.
Note: Cables pins are not all the same (see above chart), be sure to connect to headset using the included cable.

Using an external receiver:

Use the AV cable to connect headset to the RCA AV port of external devices.
To share the base station power supply with your goggles, pick up a 3m Dominator AV cable accessory from your retailer. Note; internal receiver must be shut off to properly display external AV.

Battery Charging

The 760 mAh 7.4V lithium polymer battery pack is equipped with a 3 pole balance charger lead that allows the battery to be charged off standard RC battery pack chargers (not included). Follow your charger instructions for setting up for 760 mA 7.4V Li-po. Some chargers require the discharge cable to be connected. Use the enclosed discharge lead adapter for these types of chargers.



Note (1): If the charger fails to announce charge complete, but is showing battery voltage at 8.4V, the charge can be considered finished.
DO NOT LEAVE BATTERY ATTACHED TO CHARGER WHEN CHARGER IS NOT PLUGGED IN.
Note (2): If battery becomes fully discharged or shorted an internal safety circuit will trip To reset the battery, tap 9V direct to the barrel connector via the discharge adapter cable's banana connector. This will instantly reset the battery and it can be recharged as normal.

Accessories

Diopter lens

For near sighted users, diopter lens insert sets are available that include -2, -4 and -6 dpt. See below insert instructions. Lens orientation is not critical.

SpiroNET Circular Polarized Antenna

The best performance enhancement for your dollar; SpiroNET circular polarized antennae are manufactured to machine tolerances and final tested with top end RF equipment for the best performing CP antenna on the market.
CP antennae naturally reject multipathing (biggest cause of 5G8 video breakup) and have no mismatch polarization when your aircraft banks – resulting in no rude range losses during acrobatic flight.

Specifications

Headset Specifications

Optics:

- FOV 25 degrees diagonal
- Interpupillary (IPD) distance: 63.5mm (fixed)
- Optional diopter lens inserts available in -2, -4, -6 dpt

Audio:

- Stereo

User Controls:

- Channel selection
- Contrast/brightness
- Zoom function
- Volume adjustment

Electrical:

- Power supply, 7-13V (2S/3S supply)
- Power consumption: 200/350mA (direct/wireless)

Battery:

- 7.4V 760mAh lithium polymer with safety circuit.

System:

- NTSC/PAL auto select
- Interlaced only (not support progressive scan)

Mechanical:

- Ergonomic molded shape with adjustable headband
- Rubber eye cups for ambient light reduction.
- Weight: 163g

Display

- Two full color micro QVGA LCD's (320 X 240 lines)
- Resolution 230,000 pixels per eye

Head Tracker - none

Receiver

- 5.8Ghz 7ch

Interface

- 3.5mm 4p AV in/out port
- Power in port
- 3.5mm 3p Earphone port
- PS/2 Power port (alternative headset supply from Futaba or ezUHF)

Camera Specifications:

Camera board:

- 1/2.5" 5MP digital CMOS imager
- 720p (1280x720), 30 fps, 15Mbps
- AVI file, MJPG compression
- MicroSD support to 32Gb card
- Power: 5V (powered off TX)
- Power consumption: 250mA @5V
- NTSC analog live out

Lens:

- 3.6mm IR coated
- 120° diagonal FOV (ideal for fixed camera)

Mechanical:

- Metal cased, square (27 X 25 X 23mm)
- Lens extrude from case: 12mm X 14mm diameter
- Weight: 33g (11g uncase)

Transmitter Specifications:

Electrical:

- Power supply: 7 - 16 V (2S/3S/4S supply)
- Power consumption 330mA @7.4V
- Transmitting power: 250mW
- Frequency: 5G8 (see above frequency chart)

Antennae:

- External dipole (circular polarized compatible)

Mechanical:

- 55 X 26 X 11 mm
- Weight: 23g (with antenna).

Downlink Kit

- Power supply: 7 - 16 V (2S/3S/4S supply)
- Power consumption 580mA @7.4V
  Powered via battery balance lead
- Total weight: 56g (with antenna).

Operational advice

- **For best performance**, select a channel that has the least amount of interference. While the transmitter is turned OFF, turn on the video headset and look at the screen as you check each channel. Clear channels will have a consistent static background. Channels with interference will have horizontal static lines.
- **If using on a quad or multicopter type aerial vehicle** you pretty much have to upgrade to the SpiroNET circular polarized antenna to get any decent range and good video link. Dipoles are suitable for foam planes.
- **Always perform a range test before flying**. This includes AV and RC controls. Some RC receivers can be affected by the proximity of other electronic devices particularly the AV TX.
- Try to space out your components as much as possible to avoid interference to your RC control range (keep stuff away from RX)
- Ensure your transmitter antenna has clear line of sight from the aircraft. Try to get the antenna out and away from the body.
- Until experienced, practice flying in a familiar area to avoid becoming disorientated.
- Due to antenna characteristics, there is a “null” in line with antenna direction. You may experience excessive video breakup when flying overhead
- 5.8Ghz signal strength drops off very fast, stay safely within solid AV range.
- **For maximum distance** it is very important that a clear line of sight exists between the transmitter and the video headset. Two of the worst causes of interference are human bodies and reinforced concrete.
- Place your TX antenna in open area in a vertical orientation
- **Multipathing** (reflections off buildings/ tall objects) causes signal cancellation and result in broken video. Fly in open areas away from buildings or other tall structures (i.e. barns, hills). Multipathing can be solved by upgrading to SpiroNET antenna.
- **5.8Ghz AV with 2.4Ghz RC controllers:** 2.4Ghz may cause harmonic interference on Ch2 – Ch7 of the 5.8Ghz AV (Ch1 not affected). The headset has been equipped with a high pass filter that will allow the system to work with CE certified 2.4Ghz RC controllers. However, the filtering may be insufficient to remove noise from overpowered non CE certified controllers. If you experience interference from your RC radio, change the AV channel to channel 1.
- Although you don’t require any license to operate this device, you are still legally responsible for operating in a responsible manner.

Trouble shooting

Observation	Possible cause/solution
No image, display is completely dark	- No power supplied. Check power connections.
No image, display is glowing dark grey	- If using wireless module, turn on RX power on bottom of headset. - If using AV in cable, check video source. - Ensure TX is on and camera connections solid
Static on all channels	TX has no power. Check to ensure TX LED is lit.
No image on one channel, static on the rest.	Tx is working normal. Camera is not connected or lens cap left on
Lots of interference lines (horizontal lines)	- Choose a cleaner channel.
Lots of interference lines (horizontal lines) when using 5.8Ghz receiver	Check to see if cause is harmonic interference from 2.4Ghz RC controller (turn radio on/off). - Use CH1 on TX/headset (Ch1 not affected by 2.4Ghz) - check correct frequency antenna is used
Battery DOA	Low voltage switch tripped, read notes (2) in battery section
Battery won't charge	Low voltage switch tripped, read notes (2) in battery section disengaged from socket (open and reseat).
Short range	- Ensure 5.8Ghz antenna was installed - Check for other sources of interference - Ensure transmitter has clear LOS to headset. Test in wide open area, away from any obstructions
Short range (con't)	- Ensure that a compatible antenna is installed. Do not use other manufacture antenna, they may be dual band or may be reverse SMA (no center pin to connect to receiver)
White dots on LCD display	You were careless and left goggles exposed to sun. Sun burnt off LCD color filter.

Warranty

The system can be exchanged for a new unit within 30 days for any manufacturing defects if returned in new condition. The video headset will be warranted for repair for 2 years if no signs of excessive use. Buyer will be responsible for shipping costs. If beyond the warranty period we will provide repair services.

Your 1st point of contact for all warranty issues is your retailer. We also run a support forum for all technical issues at:
http://fpvlab.com/ SPONSORS GATE/ FAT SHARK
Post your questions there and they will be answered by our technical staff or peers.

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